

Abstract

The present invention relates to a method for characterizing samples having fluorescent particles, comprising the steps of:

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- (a) monitoring intensity fluctuations of fluorescence emitted by the particles in at least one measurement volume by detecting sequences of photon counts by at least one photon detector,
- (b) determining from the sequences of photon counts intermediate statistical data comprising at least two probability functions,  $\hat{P}_1(n_1), \hat{P}_2(n_2), \dots$ , of the number of photon counts,  $n_1, n_2, \dots$ , detected in different sets of counting time intervals,
- (c) determining from said intermediate statistical data a distribution of particles as a function of at least two arguments, wherein one argument is a specific brightness of the particles, or a measure thereof, and another argument is a diffusion coefficient of the particles, or a measure thereof.